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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,350	08/24/2001	David F. Burrows	MIC-8	3605
1473	7590	03/14/2005	EXAMINER	
FISH & NEAVE IP GROUP			LERNER, MARTIN	
ROPES & GRAY LLP				
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NEW YORK, NY 10020-1105			2654	

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,350

Applicant(s)

BURROWS, DAVID F.

Examiner

Martin Lerner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 284 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 to 284 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/24/01 & 5/19/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the method steps of the invention as described in the Specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Figures 1 to 5 show only time-domain representations of waveforms. However, the invention is directed to method steps for compressing data. It is conventional in patent applications to include flow charts representing method steps. Applicant should provide at least one drawing showing the method steps of the invention.
2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing

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date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

Data Compression Method Tolerant of Variations in Components

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 to 5 and 166 to 171 are rejected under 35 U.S.C. 102(e) as being anticipated by *Westerlund et al.*

Regarding independent claim 1, *Westerlund et al.* discloses a method of forward error correction in speech coding, comprising:

"transforming said data into at least two components, said recipient tolerant of variations in one of said components" – primary encoder 708 encodes ("transforming") input speech using a primary encoding technique, and redundant encoder 710 encodes ("transforming") input speech using a redundant encoding technique; a packet contains primary data for a current frame and redundant data pertaining to a previous frame ("at least two components")(column 9, line 40 to column 10, line 11: Figure 7); decoder module 704 is "a recipient" that is "tolerant of" error conditions in either primary data or redundant data ("variations in one of said components") due to the redundant synthesis of an error concealment algorithm (column 10, lines 19 to 40);

"transmitting a compressed representation of said one of said components" – packetizer 716 forwards the packets over transmission medium 706 to decoder module 704 (column 10, lines 11 to 40: Figure 7); primary-encoded data and redundant-encoded data are "a compressed representation" of primary and redundant speech data because coding represents speech in a compressed form.

Regarding independent claim 166, *Westerlund et al.* discloses a method of forward error correction in speech coding, comprising:

"converting said primary data into secondary data" – primary encoder 708 and redundant encoder 710 encode input speech (column 9, line 40 to column 10, line 11: Figure 7); input speech is "primary data" and encoded speech is "secondary data";

"wherein: said secondary data representing at least two components" – primary encoder 708 encodes input speech using a primary encoding technique into primary

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encoded data, and redundant encoder 710 encodes input speech using a redundant-encoding technique into redundant-encoded data (column 9, line 56 to column 10, line 11: Figure 7); primary-encoded data and redundant-encoded data are “at least two components”; additionally, each of primary-encoded data and redundant-encoded data consists of bits for LPC, pitch lag, RMS value, voicing state, pitch pulse position, and pitch pulse signal by a GSM-EFR speech coding standard (column 14, line 9 to column 15, line 32); LPC, pitch lag, etc., are “at least two components” of input speech;

“said recipient is relatively more tolerant of variations in one of said components as compared with variations in another of said components” – decoder module 704 is “a recipient” that is “tolerant of” conditions in either primary data or redundant data (“variations in one of said components”) due to the redundant synthesis of an error concealment algorithm (column 10, lines 19 to 40); additionally, a coder is more tolerant of variations of pitch phase, represented by pitch pulse position, because pitch phase is not as relevant as pitch lag for speech coding (column 16, lines 15 to 32); pitch pulse position is “one of said components” of which the recipient is more tolerant with respect to variations or errors;

“said secondary data representing said one of said components is a relatively compressed representation as compared with said secondary data representing another of said components” – redundant encoder 710 encodes input speech using a redundant encoding technique (based on a redundant synthesis model); primary-encoded data is relatively more compressed than redundantly-encoded data because primary-encoded data provides information pertaining to LSF residuals, while redundantly-encoded data

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provides information pertaining to absolute LSF values (column 11, lines 38 to 60); additionally, pitch pulse position is “one of said components” that is relatively more compressed than “another of said components”, LPC, because LPC requires 26 bits, while pitch pulse position requires only 8 bits (column 16, lines 1 to 14: Table 1);

“transmitting said secondary data to said recipient” – packetizer 716 forwards the packets over transmission medium 706 to decoder module 704 (column 10, lines 11 to 40: Figure 7).

Regarding claims 2 to 4 and 169 to 170, *Westerlund et al.* discloses a packet (“said compressed representation”) contains primary data (“a relative value”) for a current frame, frame n , (“a current sample”) and redundant data pertaining to a previous frame, frame $n-1$ (“an immediately preceding sample”) (column 10, lines 1 to 5); conversely, primary data for frame n is “a subsequent sample” with respect to redundant data of frame $n-1$.

Regarding claims 5 and 171, *Westerlund et al.* discloses a procedure for maintaining pitch phase, where a decoder identifies the location of the last pulse, and then identifies the location of a succeeding pulse by moving forward one or more pitch periods into the new frame from the location of the last pulse (column 12, lines 47 to 61); moving forward one or more pitch periods from the location of the last pulse is “an increase by a predetermined increment”, where a pitch period is the amount of the increment.

Regarding claims 166 and 167, *Westerlund et al.* discloses an encoder provides quantities including pitch pulse position and pitch pulse sign ("phase") (column 15 to 32), and RMS value ("amplitude") (column 15, lines 61 to 63: Table 1).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6 to 165 and 172 to 284 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Westerlund et al.* in view of *McAuley et al.*

The only elements of these claims omitted by *Westerlund et al.* are representing a relative value by one bit and applying a Fourier transform for transforming the data. However, it is well known to transform speech data with a Fourier transform in sinusoidal or harmonic coding, and to represent differentials of one bit by differential coding. Also, *Westerlund et al.* suggests at least pitch pulse sign is encoded with only one bit. (Column 16, Lines 1 to 14: Table 1) *McAuley et al.* teaches processing of acoustic waveforms with a sinusoidal model by a discrete Fourier transform. (Abstract; Column 5, Lines 30 to 63: Figure 1) Additionally, *McAuley et al.* teaches adaptive differential pulse code modulation (ADPCM), which involves one bit differential encoding ("a relative value is represented by one bit"). (Column 11, Lines 14 to 27) It is suggested that the objective of sinusoidal coding is to better code speech signals that

have wideband harmonic components in the presence of noise. (Column 1, Lines 30 to 39) It would have been obvious to one having ordinary skill in the art to transform speech data by a Fourier transform as taught by *McAuley et al.* in a method of forward error correction of *Westerlund et al.* for the purpose of better coding of speech having wideband harmonic components and noise.

Westerlund et al. further discloses encoding data representing sound and speech.

Westerlund et al. further discloses:

“said recipient is sensitive to variations in another of said components” – a coder is more tolerant of variations of pitch phase, represented by pitch pulse position, because pitch phase is not as relevant as pitch lag for speech coding (column 16, lines 15 to 32); thus, as compared to pitch phase, an encoder is more sensitive to variations in LPC (column 16, lines 1 to 14: Table 1);

“transmitting said another of said components at least substantially in its entirety” – LPC is “said another of said components” represented by a number of bits that is greater than the number of bits for pitch lag or RMS value (column 16, lines 1 to 14: Table 1); thus LPC is transmitted “at least substantially in its entirety”.

Westerlund et al. further discloses:

“said one of said components is represented by a first number of bits” – primary-encoded data and redundant-encoded data represent input speech in a compressed form by components including pitch lag with 7 bits and RMS value by 7 bits (column 16, lines 1 to 14: Table 1);

“said another of said component is represented by a second number of bits greater than said first number of bits” – primary-encoded data and redundant-encoded data represent input speech in a compressed form by components including LPC with 26 bits (column 16, lines 1 to 14: Table 1); thus, LPC is “said another of said components” represented by a number of bits that is greater than the number of bits for pitch lag or RMS value.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Schuster et al., Riley, Lin et al., Yin, Feig et al., and Howitt disclose related art.

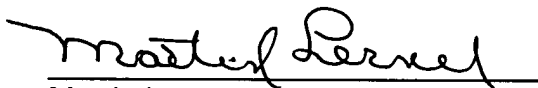
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
3/7/05


Martin Lerner
Examiner
Group Art Unit 2654